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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/853,614	05/14/2001	Shinichi Miyazaki	0229-0643P	6710
2292	7590	08/05/2004	EXAMINER	
BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747			FISCHER, JUSTIN R	
			ART UNIT	PAPER NUMBER
			1733	

DATE MAILED: 08/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

AS

**Office Action Summary****Application No.**

09/853,614

**Applicant(s)**

MIYAZAKI ET AL.

**Examiner**

Justin R Fischer

**Art Unit**

1733

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --****Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 July 2004.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 8-15 is/are pending in the application.
- 4a) Of the above claim(s) 9-12, 14 and 15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 8 and 13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413)          |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. <u>20040802</u> .                                    |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____.  | 6) <input type="checkbox"/> Other: _____.                                   |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 8 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Masaki (US 5,894,875, of record) in view of Takahashi (JP 11-334313, of record) and optionally in view of Lommerts (US 5,194,210, of record). Masaki, Takahashi, and Lommerts are applied in the same manner as set forth in Paper Number 7, Paragraph 5.

Masaki, as best depicted in Figure 2, discloses a pneumatic tire construction comprising a carcass 4, a breaker 6, and a cap ply or band ply 7, wherein the carcass is formed of organic fiber cords, including polyester, and the breaker is formed of steel cords (Column 2, Line 60 – Column 3, Line 18). In describing the band ply, Masaki suggests the preferred use of a high modulus organic fiber cord layer, such as polyester, aramid, rayon, and PEN, and notes that the particular material is not limited (Column 4, Lines 49-55). While Masaki fails to suggest the use of an aliphatic polyketone fiber cord, Takahashi (Paragraphs 9-12) discloses the use of aliphatic polyketone fiber cords in a variety of tire components and describes them as high modulus, lightweight, and economical in comparison to commonly used tire cord materials (e.g. steel, aramid). In particular, Takahashi teaches the use of such aliphatic

polyketone fiber cords in an outermost cap or band ply since they provide the aforementioned benefits over existing tire cord materials. It is additionally noted that while Example 15 in Table 2 of Takahashi is the only example in which a cap or band ply formed of aliphatic polyketone fiber cords is included, this example results in the best high speed durability (fourth from bottom row in Table 2) and improved driving stability (second from bottom row in Table 2), which are the same benefits desired by the claimed invention (results of Table 1 on Page 9). Lommerts (Column 5, Lines 32-46) is optionally applied to further evidence the recognized use and benefits of aliphatic polyketone fiber cords in tires and particularly, the use of such cords in place of conventional cords, such as rayon, nylon, polyester, and aramid (all are disclosed as possible cap ply reinforcing materials in Masaki). As such, it would have been obvious to one of ordinary skill in the art at the time of the invention to form the cap ply or band ply of Masaki from aliphatic polyketone fiber cords, in view of Takahashi and optionally in view of Lommerts.

Regarding the makeup of the aliphatic polyketone fiber cords, the amended claim language does not further define the structure of the claimed tire article but rather is directed to the method of forming the aliphatic polyketone fiber cords. It is further noted that Takahashi does suggest that such cords are commonly formed by melt spinning and furthermore, that the cords are commonly formed of a copolymer of carbon monoxide and ethylene (Page 6 of Translation).

With respect to the properties of the aliphatic polyketone fiber cord, Table 2 of Takahashi describes several embodiments in which the aliphatic polyketone fiber cords

are used in the belt structure. In these instances, the tensile strength is always greater than 10.2 g/d, the standard elongation is always less than 2.2 %, and the twist number or coefficient is 1,650. Furthermore, Takahashi suggests a range between 1,000 and 2,000 for the twist number or coefficient when used as a belt reinforcing element (Paragraph 47). While the reference fails to expressly describe the dry heat shrinkage as being less than or equal to 6.0%, one of ordinary skill in the art at the time of the invention would have expected this property to be present in the aliphatic fiber cords of Takahashi as it represents a material property and not a processing property, there being no evidence of any unique processing to obtain the claimed dry heat shrinkage. It is additionally noted that the aliphatic polyketone fiber cords of Takahashi are used in the same tire component (belt) and have a tensile strength, standard elongation, and twist number in accordance to the limitations of the claimed invention and as such, it is the examiner's position that the aliphatic polyketone fiber cords of Takahashi have a dry heat shrinkage that falls within the range of the claimed invention. Thus, Takahashi evidences that the claimed properties for the aliphatic polyketone fibers cords are consistent with those commonly associated with aliphatic polyketone fibers used in tires, particularly in the belt region.

Lastly, while Masaki suggests the use of other organic fiber cords for the carcass, in addition to polyester, the original disclosure fails to provide a conclusive showing of unexpected results to establish a criticality for the following tire design:

Carcass- Polyester, Breaker- Steel, Band Ply- Aliphatic Polyketone

The results of Table 1 suggest that the use of aliphatic polyketone fiber cords in a cap or band ply results in improved high speed durability, while optimizing tire weight and cost- they do not suggest that there is any criticality to the combination of a carcass formed of polyester and a breaker formed of steel. These results are not found to be persuasive since Takahashi specifically attributes the improvement in high speed durability to the inclusion of a cap ply formed of aliphatic polyketone fiber cords and further, Takahashi specifically states that aliphatic polyketone fiber cords provide the benefits of being lightweight and economical in comparison to existing tire materials. Also, Takahashi specifically recognizes that aliphatic fiber cords provide improvements in fatigue resistance and cost as compared to aramid fiber cords, which is analogous to that disclosed by the claimed invention (Page 1, 3<sup>rd</sup> Paragraph). Additionally, Lommerts is optionally applied to further evidence the recognized use of such aliphatic polyketone fiber cords in tires in place of conventional materials, such as rayon, nylon, polyester, and aramid, all of which are suggested as possible reinforcing materials by Masaki. Thus, one of ordinary skill in the art at the time of the invention would have been motivated to form the cap or band ply of Masaki from aliphatic polyketone fiber cords since they provide excellent modulus characteristics while reducing tire weight and cost in comparison to existing tire materials and further provide improved high speed durability, which is similarly desired by the claimed invention.

### ***Response to Arguments***

3. Applicant's arguments filed July 26, 2004 have been fully considered but they are not persuasive. Applicant contends that the preferred teaching of Takahashi would

have motivated one of ordinary skill in the art at the time of the invention to form the carcass of Masaki from aliphatic polyketone fiber cords as opposed to the band layer. However, as set forth in the rejection of above, Takahashi suggests the use of the claimed aliphatic polyketone fiber cord in the carcass and/or the belt assembly (including the band layer). In particular, Takahashi suggests that the use of such cords results in improved high speed durability, reduced cost, and reduced weight- these benefits are analogous to those detailed by applicant. Thus, Takahashi provides an express teaching to form a band layer with the claimed aliphatic polyketone fiber cords. It is additionally noted that the use of the claimed cords in the band layer is independent from the use of such cords in the carcass or any additional tire component.

Regarding the experimental data, the results are not found to be persuasive as set forth in the rejection above.

### ***Conclusion***

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Justin R Fischer** whose telephone number is **(571) 272-1215**. The examiner can normally be reached on M-F (7:30-4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Blaine Copenheaver can be reached on (571) 272-1156. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Justin Fischer

August 2, 2004

  
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